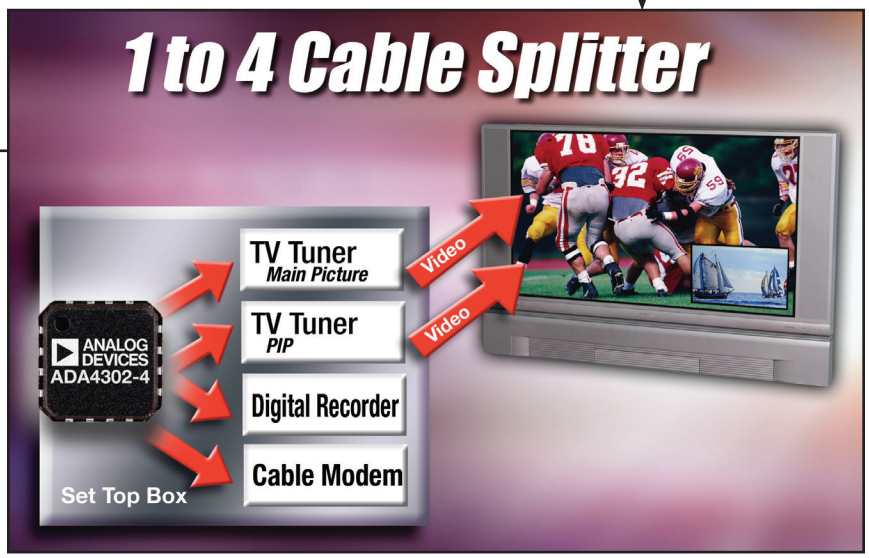
ADA4302-4

Active RF Splitter for Advanced TV and Set-Top Box Applications

Features

- Divides an input into four outputs without degrading the input signal quality.
- Enables delivery of high quality video or data to multiple simultaneous applications enabling features such as picture-in-picture, personal video recording, and broadband cable modem capability.
- Low noise and distortion levels allow systems to be sensitive to smaller signals, resulting in fewer signal interruptions and higher quality pictures.
- Differential architecture maintains excellent linearity throughout the CATV band.
- Outputs may be configured independently from one another offering flexibility.
- Requires significantly less circuitry than discrete splitter implementations.



The advent of multituner applications, combined with the growing consumer demand for digital cable and interactive voice and data services, is driving the need for components that split a signal into multiple outputs while maintaining signal integrity and amplifying signal power. To meet these requirements, Analog Devices has developed the ADA4302-4 active RF splitter.

The ADA4302-4 is used as an active element in applications where a lossless signal split is required. The product's innovative four-way signal-splitting technology resolves design challenges in multituner cable set-top boxes, cable splitter modules, advanced televisions, and home gateways that need to simultaneously deliver video or data content. The ADA4302-4 provides a differential input and four differential outputs that allow the delivery of the RF signal to up to four different signal paths. These paths may include, but are not limited to, a main picture tuner, the picture-in-picture (PIP) tuner, a digital video recorder (DVR), and a cable modem (CM). Traditional solutions have consisted of discrete passive splitters followed by separate fixed gain amplifiers.

Unlike some existing solutions that require many discrete components to split the signal and amplify power while maintaining signal integrity, the ADA4302-4 active RF splitter offers these functions with a 2 dB lower noise figure and 25 dB better CSO (composite second order distortion), all within a compact (4 mm × 4 mm), single chip solution.

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Product Specifications

- Single 5 V supply
- CATV operating range of 54 MHz to 865 MHz
- 1.3 GHz, –3 dB bandwidth
- 4.6 dB of gain per output channel
- 4.4 dB noise figure
- 25 dB isolation between output channels
- CSO and CTB better than –80 dBc (135 channels, 15 dB mV per tone)

By dividing an input into four outputs without degrading the signal quality, the device enables the lowest noise and distortion, while reducing design work and overall system cost. The lower noise and distortion levels allow advanced TVs and set-top box designs to be sensitive to smaller signals, resulting in fewer signal interruptions and higher quality pictures.

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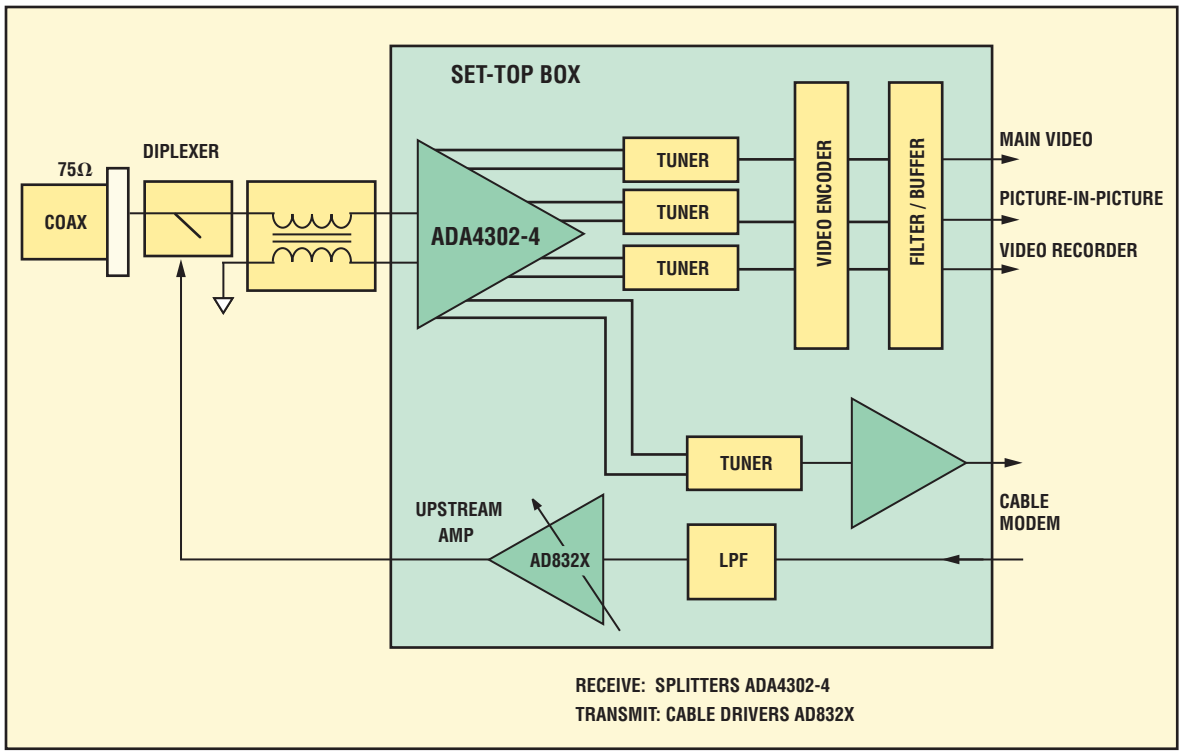
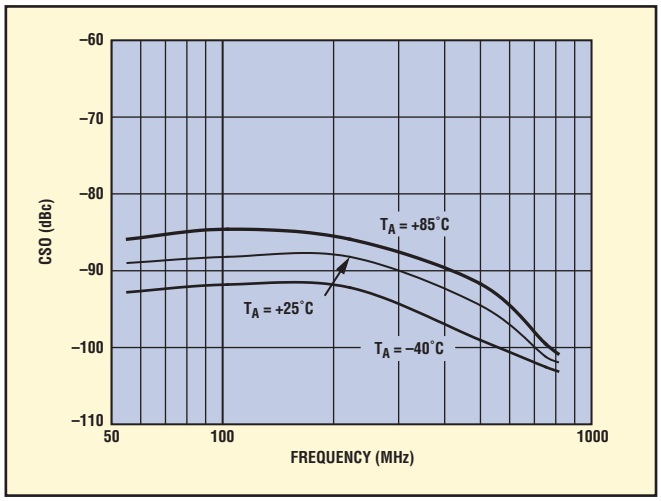
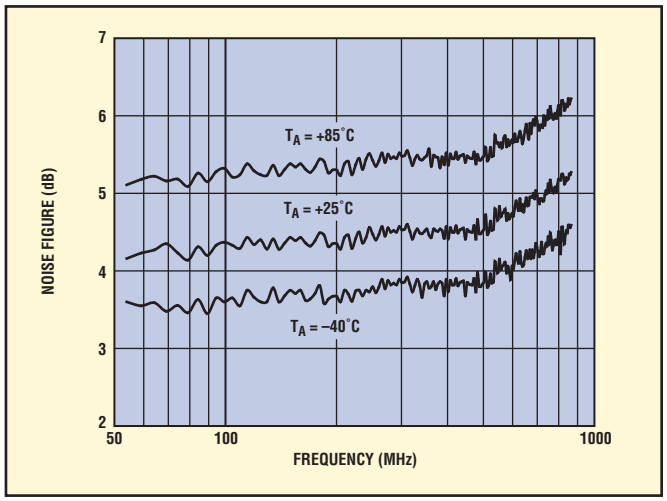




Composite Second-Order vs. Frequency



Noise Figure vs. Frequency

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